What is an Insect?

Guiding Questions:

1. *What is an insect?*
2. *What are the physical characteristics of insects?*

Objectives

Concepts:

- An insect is a very small animal with particular characteristics.
- Insects are invertebrates. They have no backbones.
- Most insects walk, but some can fly and jump.
- Insects need water, air, and food to live.

Facts:

- Most insects have five basic physical characteristics:
    1. Insects have what we call an exoskeleton or a hard, shell-like covering on the outside of its body.
    2. Insects have three main body parts: head, thorax, and abdomen.
    3. Insects have a pair of antennae on top of their heads.
    4. Insects have three pairs of legs. They use the legs for walking, but sometimes an insect may have a pair of legs that are specially designed for jumping.
    5. Insects have two pairs of wings.
- Some insects are helpful to people.
- Some insects are harmful to people.

Skills

- Making Observations
- Making Comparisons
- Documenting Findings
- Communicating Findings

Materials:

1. Large glass jar
2. Square piece of cheesecloth (or make holes in the lid of the jar so air can get in)
3. Rubber band to hold the cheesecloth on the mouth of the jar
4. Grasshopper
5. Freshly picked grass and twigs (sprinkle a little water on them)
6. Magnifying glass
7. Handout

Safety Precautions

No special precautions, but glass jars can break if dropped.

Procedures and Activity

Introduction

Ask the following questions and share ideas:

1. What is an insect?
2. What are the physical characteristics of insects?

Today, we are going to carefully study and observe a grasshopper. We will look at its body to identify the main physical characteristics or traits of an insect.

Activity

Have each person or pair

1. Put fresh grass clippings and twigs in the bottom of jars. Sprinkle a little water on them.
2. Put grasshoppers in jars.
3. Cover the top of the jar either with a lid you put holes in or with a piece of cheesecloth. Secure the cheesecloth with a rubber band around the top of the jar.
4. Use a magnifying glass to very carefully study and identify the physical body parts of the grasshopper.
5. Write the names of the body parts on the handout.

Evaluation

Ask again these guiding questions:

1. *What is an insect?*
2. *What are the physical characteristics of insects?*

We should see on the handout and hear during discussion that insects have the following body parts and characteristics:

1. An exoskeleton
2. Three main body parts: head, thorax, and abdomen
3. Pair of antennae on top of their heads
4. Three pairs of legs. (Grasshoppers have a pair of special, long legs to jump with!)
5. Two pairs of wings. Some insects, however, do not have fully developed wings for flying. For example, some ants do not have wings to fly.

Note: If you have a female grasshopper, you will see a long, pointed segment at the end of her abdomen. She uses this body part to deposit her eggs in soft ground. If you have a male grasshopper, the end segment will be rounded.

Extension Ideas

- Catch other insects and put in a jar to study. See if they have the same basic five physical characteristics. You might look for lady bugs, moths, mosquitoes, house flies, beetles, praying mantises, dragonflies, ants, etc. If children have ever had to deal with head lice, they would be very interested in seeing an image of a louse!
- Many insects are helpful to people. Pick a helpful insect to study about. Examples may include: bees that make honey, silk worm moths that spin silk, bees and butterflies that pollinate flowers, mantises and lady beetles that eat harmful insects. Draw pictures, write reports, or make posters about these helpful insects.
- Some insects are a nuisance or even cause harm to people. Pick a harmful insect to study. Examples may include: grasshoppers or locusts that eat crops; gypsy or leopard moths that kill leaves on trees; termites that eat wood on houses and other buildings; mosquitoes that carry disease-producing germs; fleas, lice, wasps, and gnats that sting and bite people and cause mild to life-threatening dangers for people. Draw pictures, write reports, or make posters about these harmful insects.
- Research the emerald ash borer that began killing the ash trees in our neighnorhoods in southeastern Michigan in summer 2002! Here are some more links for your research.
- The 17-year cicadas are due to re-emerge in southeastern Michigan in spring 2004. Learn more about them at Cicadas of Michigan.
- People have been struggling with how to control and kill harmful insects for years. You may be interested in learning more about chemicals that are used to kill insects. See how insects adapt so they can live in spite of our sprays and dusts. Investigate how some pesticides have had very harmful effects on other forms of life like plants, trees, and fish in water treated to kill off certain insects. Older students may wish to research the genetic modification of food crops to make them resistant to pests.
- Learn about the pesticides used on fruit trees and other plants that we eat. How harmful are these chemicals to people? Does rinsing fruit and vegetables with plain water remove the pesticides and make them safe for us to eat?
- Learn more about organic gardening. Talk with someone who raises vegetables organically. What is involved? What are the problems with organically raised food? Are these foods safe to eat? Why do they typically cost more that non-organic foods?
- Visit other insect-related Web sites, such as the Orkin Insect Zoo, Yucky Roach World, the Children's Butterfly Site, Monarch Watch, and the University of Michigan Zoology Museum's Insect Division.

Careers Related to Lesson Topic

- Biologist
- Entomologist
    - Tour - UM Museum of Zoology
- Environmentalist
    - Career Presentation - Lynda Asher
- Farmer
- Gardener
    - Tour - Project Grow

Prerequisite Vocabulary

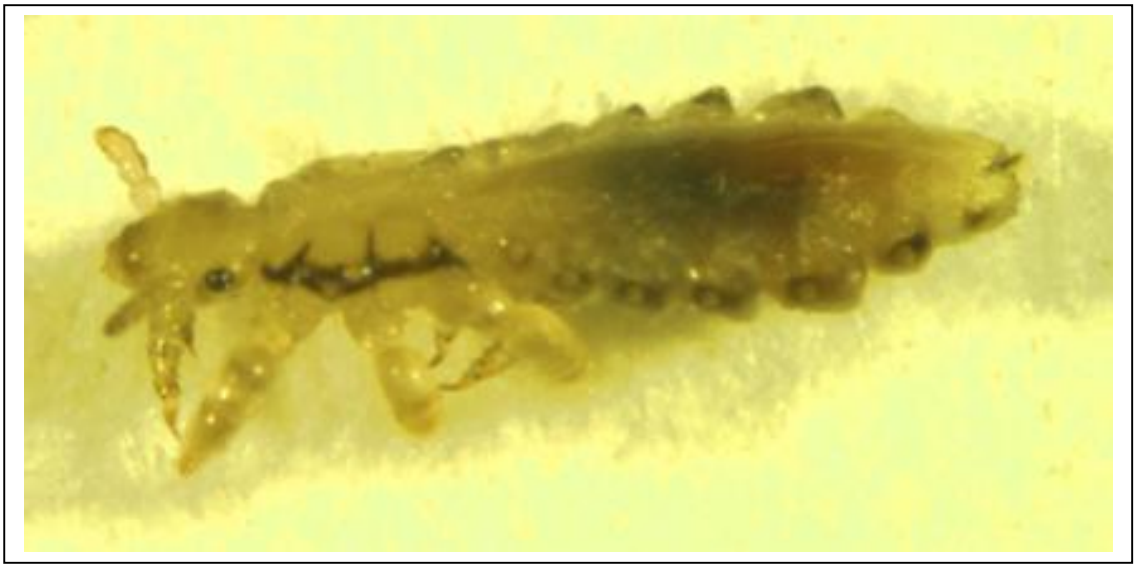
Abdomen
The posterior (farthest to the rear) section of an insect's body.

Antennae
Little feelers on the top of an insect's head. Insect antennae are a bit like radio antennae: they receive messages of sound and motion for the insect. These messages often help an insect know where it is crawling or flying. (Feelers are the easiest way to tell moths from butterflies: moth antennae are very feathery-looking.)

Exoskeleton
The hard and shell-like covering on the outside of insects' bodies. "Exo" means "outside." Just as our inside bones help to support and protect the soft parts of our bodies, so does the insect's outside skeleton support and protect its soft inner body parts.

Invertebrates
Animals that do not have a backbone. (Because insects have exoskeletons, they don't need backbones.)

Thorax
The middle section of an insect's body, between the head and abdomen.



Insect Handout

Name: _____ Date: _____

Find and label these body parts:

Abdomen, Antennae, Eye, Head, Legs, Thorax, Wings